

HAER  
CONN  
1-NOWA, V,  
1-

GREEN'S LEDGE LIGHTHOUSE  
Long Island Sound  
Norwalk vicinity  
Fairfield County  
Connecticut

HAER No. CT-175

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
Northeast Region  
Philadelphia Support Office  
U.S. Custom House  
200 Chestnut Street  
Philadelphia, P.A. 19106

HAER  
CONN  
1-NOWA.V,  
1-

## HISTORIC AMERICAN ENGINEERING RECORD

### GREEN'S LEDGE LIGHTHOUSE

HAER No. CT-175

**Location:** Long Island Sound, Norwalk vicinity, Fairfield County, Connecticut

USGS Norwalk South CT Quadrangle

Universal Transverse Mercator Coordinates: 18.630765.4544320

**Engineer/Architect:** U.S. Lighthouse Board

**Fabricator:** Philadelphia Construction

**Date of Construction:** 1902

**Present Owner:** United States Coast Guard  
Aid to Navigation Team  
120 Woodward Avenue  
New Haven, CT 06512

**Present Use:** Active navigational aid

**Significance:** Green's Ledge Lighthouse, built 1902, is significant as an example of a pre-fabricated, conical, cast-iron light tower built on a cylindrical cast-iron and concrete foundation. That design was developed by the U.S. Lighthouse Board in 1873 as a less expensive alternative to masonry construction for the marking of submerged hazards. The materials, construction, architectural detail and interior finish at Green's Ledge Lighthouse reflect the standardized design for this type of structure. This lighthouse is also significant for its role in the navigational aids system in Long Island Sound, where it warns of a submerged rock ledge at the western boundary of the Norwalk Islands group.

**Project Information:** The United States Coast Guard (USCG) proposes to install a solar power array on Green's Ledge Lighthouse. The proposed project will impact the historic and engineering integrity of this property. The lighthouse is listed in the National Register of Historic Places as part of a thematic nomination of Operating Lighthouses in the State of Connecticut. In accordance with an agreement between the United States Coast Guard and the Connecticut State Historic Preservation Office (SHPO), Historic American Engineering Record documentation is to be prepared for the lighthouse prior to installation of the solar array.

Virginia H. Adams, Director of Architectural Projects  
Matthew A. Kierstead, Industrial Historian

The Public Archaeology Laboratory, Inc.  
210 Lonsdale Avenue  
Pawtucket, Rhode Island 02860

## **PART I. DESCRIPTIVE INFORMATION**

The 1985 *National Register of Historic Places Inventory—Nomination form for the Green's Ledge Lighthouse* describes the structure as follows:

Green's Ledge Lighthouse, built in 1902, is located on a water bound site at the southwestern end of the Norwalk Islands, an archipelago off the Connecticut shore in western Long Island Sound. It marks a rock ledge at the western approach to Norwalk Harbor. The structure consists of a cast iron tower with a lantern resting on a cylindrical cast-iron and concrete foundation with a wide, flaring upper rim. The tower presently is painted brown on the lower half and white on the upper half, and the base is painted black. The base is surrounded with boulder riprap to protect the structure from wave action, and a short, curved stone jetty, protecting a small, modern concrete boat landing structure, projects to the northwest.

Standing in ten feet of water at low tide, the foundation is made of curved cast iron plates, fitted together with bolts through molded flanges on the inside edges. The foundation cylinder flares out in a trumpet shape to accommodate a deck upon which the lighthouse rests. An exterior concrete layer and interior brick-and-concrete filling stabilize and strengthen the foundation, which contains a brick-lined basement and water cisterns. Several circular iron rod bands with tensioning blocks ring the base. A cable-and-stanchion railing is located at the perimeter of the base.

The four-story tower is built up with five courses of curved cast iron plates, assembled in the same manner as the foundation. On the first and second floors, a steel-plate, brick-lined wall separates the circular inner rooms from an outer circular staircase. A gallery or deck encircles the lighthouse at three levels: outside the first story, the watch room, and the lantern. The first story gallery originally had a roof and was edged with ornate cast iron stanchions with triple railings. Alternating stanchions rose to the level of the roof as a support. The roof has been removed and metal rods have replaced the cast iron stanchions, which, along with metal remnants of the gallery roofing system, are scattered atop the riprap surrounding the lighthouse.

Architectural ornament on Green's Ledge Lighthouse is primarily limited to cast iron window and door surrounds. The west-facing metal entry door is a replacement for the outermost of two doors that originally filled the rectangular opening. The door surround consists of a simple, cast iron lintel with a segmental arch top and straight base. The lintel is set on a pair of ogee consoles, which flank the door jamb and are attached to pilasters with simple plinth bases. The cast iron window surrounds of the first, second, and third stories are of similar design, with the consoles reduced to brackets and the plinths replaced by projecting sills. The window openings have been covered with steel-plate inserts with small rectangular cutouts. The windows on each of the first three stories are positioned to accommodate the arrangement of the interior spaces.

Interior walls on all levels of the tower are painted brick. The floors are built up with wedge-shaped sheet-iron segments, bolted together and supported by a central cast iron column, which rises from the basement to the watch room floor. On each floor, the column has a simple Doric capital and base, except for the third, where they are more elaborate. The basement is reached by a curved, cast-iron staircase, and consists of a circular central room with an outer gallery accessed by segmental-arch doorways in the thick brick wall. The first floor, originally used as a kitchen, has one short window to accommodate the built-in equipment, now removed. The second floor originally included a bedroom and bathroom, divided by partitions, now removed. The third floor is an open, circular room. The fourth floor features exposed I-beams on both the

**GREEN'S LEDGE LIGHTHOUSE**  
**HAER No. CT-175**  
**(Page 3)**

floor and ceiling, radiating from the central column, and six porthole windows with original bronze frames and hardware. Much of the original woodwork has been removed from all floors, although some tongue-in-groove paneling still remains in the watch room above the fourth floor.

A checker-tread surface appears on the watch room gallery and the lantern gallery floors, each ringed by a simple flat metal railing. The lantern gallery railing is supported by pipe stanchions bolted to the underside of the deck. On the watch gallery, a triple railing is supported by cylindrical stanchions topped by spherical knobs. Each stanchion is anchored by a threaded bar, passed down through the edge of both decks in a hollow sleeve and secured with cast iron pendants. This arrangement of the railing and ring of cast-iron brackets below the gallery are a major decorative feature of the lighthouse exterior.

The cylindrical cast iron watch room and lantern are of standardized manufacture and have been stripped of much detail. In the watch room vertical beaded board sheathing, some of which is still in place, originally covered the walls. Two l-beams, originally enclosed, span the ceiling and support the weight of the lantern above. Double-leaf iron hatch covers at the top of a helically-curved metal ladder permit access to both the watch room and the lantern. The lantern, seven feet in diameter, contains diamond-shaped, curved glass panes, 25 inches across, framed with diagonal brass astragals. Cast iron plates containing circular ventilators with adjustable covers are located in the lower, cast iron lantern walls. The conical cast iron roof supports a spherical iron ventilator and lightning deflector rod. Within the lantern stands the modern lighting equipment, a small, rotating beacon manufactured by Crouse-Hinds of Syracuse, N.Y. The original equipment, installed in February 1901, was a fifth order lens with a flashing red light. Three months later a fourth order lens was installed, showing a fixed white light with red flashes every fifteen seconds.

## **PART II. HISTORICAL INFORMATION**

The 1985 *National Register of Historic Places Inventory—Nomination form for the Green's Ledge Lighthouse* recounts the history of the structure as follows:

Green's Ledge Lighthouse, constructed in 1902, is significant as a typical example of a pre-fabricated, conical, cast-iron and concrete light tower and foundation, developed in 1873 by the engineers of the U.S. Lighthouse Board for erection on submerged navigational hazards. The materials, construction, architectural detail and interior finish at Green's Ledge Light reflect the second phase of standardized cast-iron lighthouse design development. This lighthouse is also significant for the part it played in the improvement of the navigational aids system in Long Island Sound, where it warns of a submerged rock ledge at the western boundary of the Norwalk Islands group.

Temporary lighted navigational aids were constructed in the American Colonies as early as the first half of the seventeenth century. The first permanent lighthouse was built on Little Brewster Island in Boston Harbor in 1716. The New London Harbor Light, established in 1760, was the first permanent lighthouse erected on Long Island Sound. A series of other lights were constructed along the northeastern coast to improve navigation on the busy shipping lanes between New York and Boston during the late eighteenth and early nineteenth centuries.

The Norwalk Islands located at the western approach to Norwalk Harbor, represented a significant hazard

to shipping in western Long Island Sound. The first attempt to mark the site was made in 1826 when a lighthouse was established on Sheffield Island, a large island near the middle of the Norwalk Island chain, southeast of Green's Ledge. This lighthouse was later replaced in 1868. During the 1890s the federal government appropriated funds to improve Norwalk Harbor to handle an increase in commercial traffic. Part of the appropriation was to go towards a better method for marking the Norwalk Islands, which in places were especially hazardous for deep-draft vessels. In 1896 two lighthouses, one to be located at Peck Ledge and the other at Green's Ledge, at the east and west entrances to the Norwalk Harbor channel, respectively, were proposed to Congress. On March 3, 1899, an appropriation of \$60,000 was granted for the construction of Green's Ledge. The erection of the foundation and superstructure was begun in 1900 by the Philadelphia Construction Company.

The standardized cast-iron construction method used in the Green's Ledge Lighthouse was developed by the U.S. Lighthouse Board engineers in the last quarter of the nineteenth century. During this period many of the remaining proposed lighthouse sites—mostly wave-washed reefs, shoals, and ledges—posed major engineering challenges. While such sites off the Southern Atlantic coast could be marked using the relatively cheap and easily executed method of securing lighthouses with iron piles, either anchored in rock or screwed deep into sandy shoals, such construction was unsafe in northern areas where ice flows were common. In those northern areas, the marking of water-bound sites usually involved the construction, at considerable cost in terms of money, materials, and manpower, of massive masonry foundations, keepers quarters, and light towers. Typical of this type of construction are the lighthouses at Minot's Ledge in Massachusetts and Race Rock in Long Island Sound.

With the advancing development of cast-iron technology in the middle of the nineteenth century, a cylindrical foundation constructed of cast iron and filled with concrete became a feasible alternative to stone. Major George H. Elliot, engineer of the U.S. Lighthouse Board, is given credit for developing this type of foundation in 1873. Made of identical curved cast iron plates, with flanges extending toward the inside of the curve and knees molded into the casting for reinforcement, those prefabricated foundations were assembled into rings with bolts at the construction site. Successive rings were bolted together, lowered onto the prepared site and filled with concrete or stones. These foundations proved to be as strong and stable as masonry, and since they could be mass-produced, realized substantial savings in design time, production, and transportation costs. Cast iron became the preferred material for lighthouse foundations and was widely used between 1873 and about 1910, when reinforced concrete technology superseded it.

Compared to the often ornate architectural detailing found on their masonry predecessors, cast iron lighthouses offered little in the way of applied ornamentation. However, at least three different phases of minor architectural ornamentation can be discerned. The first phase is represented in the deeply-molded, arched and pedimented window and door hoods found at Stratford Point (1881) and Saybrook Breakwater (1887). A second phase, incorporated simplified classical detailing found most often in cast-iron window and door surrounds. The earliest known example of this second phase of ornamentation within the present Third Lighthouse District was the Delaware Breakwater Lighthouse constructed in 1885. In 1901 a third phase of ornamentation for cast iron lighthouses was introduced at Harbor of Refuge, Lewes, Delaware. This phase was characterized by greater abstraction and simplification of door and window trim and a molded cornice in place of brackets.

Green's Ledge Lighthouse is a notable example of the second phase of cast iron lighthouse construction.

Its classical detailing can be seen in its segmental arched window and door surrounds that consist of shallow lintels with brackets and flanking pilasters. Put into operation in 1902, the lighthouse continues to serve its important role in marking the dangerous Norwalk Island shoal at the west entrance to Norwalk Harbor.

### **PART III SOURCES OF INFORMATION**

#### **A. Plans and Drawings**

United States Coast Guard Civil Engineering Unit, Metro Center Boulevard, Warwick, RI

#### **B. Historic Views**

None located

#### **C. Bibliography**

Smith, Edward, Dorothy B. Templeton and Richard Meyer

1986 *Historic Sites Survey, Inventory and Analysis of Aids to Navigation in the State of Connecticut*. John Milner Associates, Inc., West Chester, PA

---

1986 *Historic Sites Survey, Inventory and Analysis of Aids to Navigation in the State of Connecticut: Appendix C—Condition Reports: Green's Ledge*. John Milner Associates, Inc., West Chester, PA

Templeton, Dorothy B.

1985 *National Register of Historic Places Inventory—Nomination Form for the Green's Ledge Lighthouse*. Connecticut Historical Commission, Hartford, CT

#### **D. Interviews**

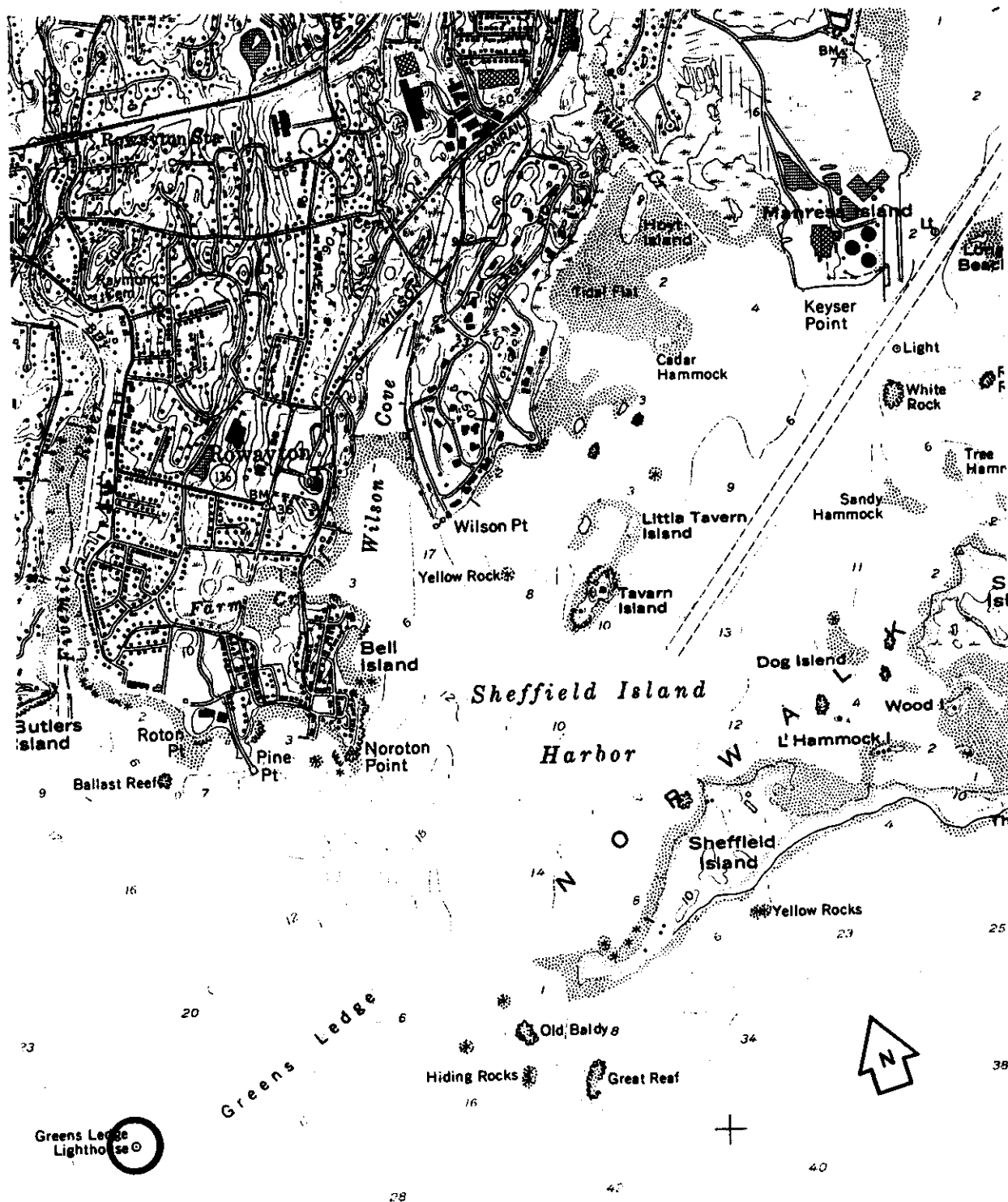
None conducted

# GREEN'S LEDGE LIGHTHOUSE

HAER No. CT-175

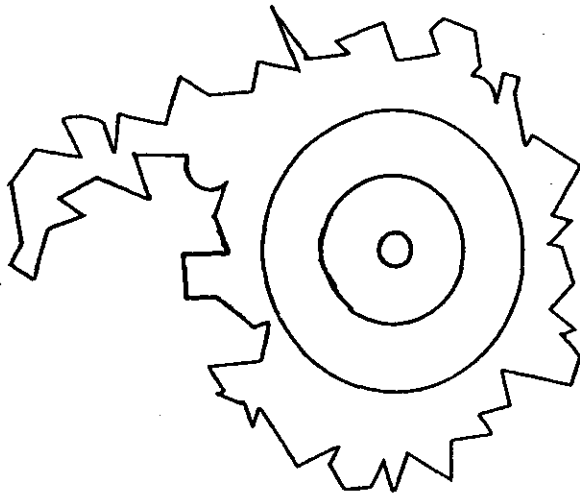
(Page 6)

Location Map



**GREEN'S LEDGE LIGHTHOUSE**  
**HAER No. CT-175**  
**(Page 7)**

**SITE PLAN**

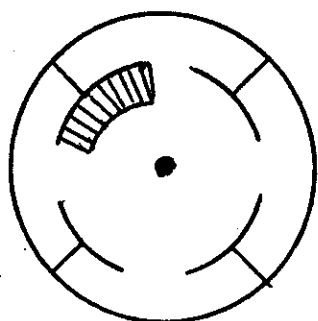


**GREEN'S LEDGE LIGHTHOUSE**

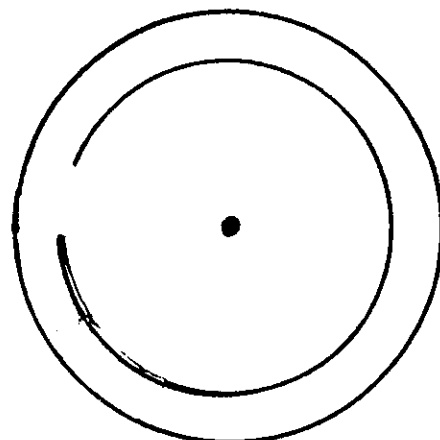
**HAER No. CT-175**

**(Page 8)**

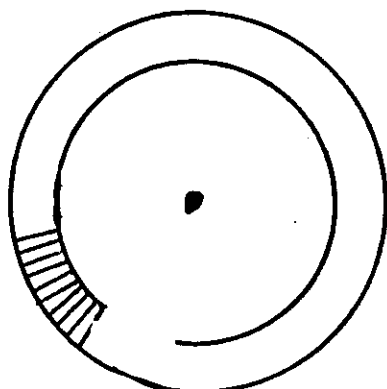
**FLOOR PLANS**



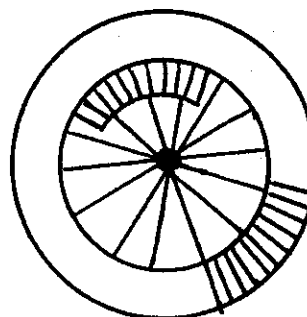
**BASEMENT**



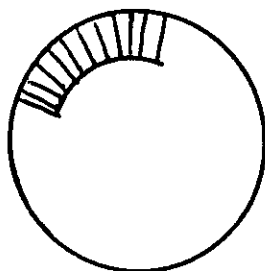
**FIRST FLOOR**



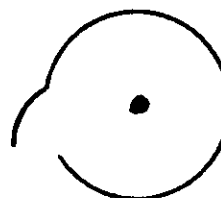
**THIRD FLOOR**



**FOURTH FLOOR**



**FIFTH FLOOR  
WATCH ROOM**



**LANTERN**